MISSOURI DEPARTMENT OF TRANSPORTATION
MATERIALS ENGINEERING
JEFFERSON CITY, MISSOURI

TEST METHOD
MoDOT T 74
PULLOUT TESTS ON EPOXY BONDING AGENTS FOR RESIN ANCHOR SYSTEMS

1.0 Scope. This test method covers the procedure for determining the total load in pounds (kN) required to cause failure of epoxy bonding agents for resin anchor systems for use in anchoring products such as threaded rod, and plain and epoxy coated reinforcing bars in concrete.

2.0 Concrete Cylinder and Anchored Product Requirements.

2.1 Concrete Cylinders. Two concrete cylinders, 6 x 12 inches (150 x 300 mm) for each bonding agent and style of anchoring product shall be prepared using a limestone coarse aggregate and moist cured for at least 28 days. Representative cylinders shall be tested and must obtain a minimum compressive strength of 6,000 psi (28 MPa).

2.2 Reinforcing Bars. Reinforcing bars shall be Grade 60 (Grade 420) in accordance with Sec 706 & 710 of the Missouri Standard Specifications for Highway Construction. For testing, the size and embedment depth of the reinforcing bar will be as shown in the manufacturer's certification. The bar shall be a minimum of 24 inches (60 mm) in length.

2.3 Threaded Rods. The threaded rod shall be long enough to provide a minimum of a 2-inch (50 mm) protrusion after insertion at the manufacturer's recommended embedment depth. For testing, the size and embedment depth of the reinforcing bar will be as shown in the manufacturer's certification.

3.0 Procedure.

3.1 Drilled Holes. The holes drilled in the concrete cylinders shall be to the diameter and depth as recommended by the manufacturer. The holes shall be clean and blown dry prior to placing the bonding agent.

3.2 Bonding Agent. The placing of the bonding agent shall begin with positioning the cylinder with the hole in a horizontal position. If bulk material is furnished without a mixing tube, the bonding agent may be placed in the hole with the cylinder in a vertical position. The cylinder shall then immediately be placed in a horizontal position and the anchored product inserted. Enough bonding agent shall be placed in the hole to completely fill the cavity when the anchored product is inserted. The anchored product shall be inserted with a twisting motion sufficient for one full revolution. The cylinder shall remain in the horizontal position until curing is complete. All mixing and placing of the bonding agent shall be in accordance with the manufacturer's recommendations.

3.3 Performing Test. The test shall be performed when the bonding agent has cured for 24 hours. The anchored product shall then be pulled from the concrete cylinder at the rate of 0.5 inches (13 mm) per minute.

4.0 Report. The report shall indicate for each test specimen the type, size and embedment depth of the anchored product, the diameter of the hole, the ultimate load in pounds (kN) required to cause failure of the system, the average of the two test specimen loads, a description of the failure for each specimen, and the cure time when tested.